

AMENDMENT

Unmarked Version

In the claims:

Presented below are the amended claims in a clean, unmarked version.

1. For use in a communications network having a plurality of nodes wherein a node may encode real-time information for propagating over said network, a method of processing said real-time information comprising:

providing said node with a plurality of output buffers;

 - (a) electronically capturing said real-time information and converting it into electronic data;
 - (b) differentially encoding said electronic data using a previously stored transmit image as a base to produce differential data;
 - (c) storing said differential data in one of said plurality of output buffers;
 - (d) monitoring said network for access to propagate said differential data;
repeating steps (a)-(d) until said node may propagate said differential data over said network;

transmitting data over said network from the one of said plurality of output

buffers providing a best differential data to a receiving node on said network, wherein said best differential data represents a differential data whose use in conjunction with the previously stored transmit reference image produces an image that approximates a current frame better than use of other differential data contained in said plurality of output buffers; and

calculating a new transmit reference image based on said best differential data and said previously stored transmit reference image.

22.

An apparatus comprising:

an encoder for producing encoded real-time information;

a transmit reference buffer for storing a current transmit reference;

compression circuitry coupled to the encoder and to the transmit reference

buffer for producing compressed data based upon the current transmit reference and the encoded real-time information;

a plurality of dynamically created output buffers coupled to the

compression circuitry for storing the compressed data, each dynamically created output buffer being created and configured based upon one or more characteristics of a communication channel to be used for transmitting the encoded real-time information over a network; and

a network interface coupled to the plurality of dynamically created output

buffers, the network interface for interfacing with the network, for determining a selected output buffer from the plurality of dynamically created output buffers and for transmitting data over the network from the selected output buffer, the selected output buffer containing compressed data which accommodates the one or more characteristics of the network better than compressed data in at least one other buffer of the plurality of dynamically created output buffers.

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The apparatus of claim ²~~22~~, wherein the selected output buffer contains compressed data which accommodates one or more characteristics of the network better than compressed data in all other buffers of the plurality of output buffers.

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An apparatus for transmitting real-time information over a network, the apparatus comprising:

an encoder for producing encoded real-time information;

a transmit reference buffer for storing a current transmit reference;

compression circuitry coupled to the encoder and to the transmit reference buffer for producing compressed data based upon the current transmit reference and the encoded real-time information; and

a plurality of dynamically created output buffers coupled to the compression circuitry for buffering the compressed data, each of

the plurality of dynamically created output buffers having contents and being created and configured based upon one or more characteristics of a communication channel to be used for transmitting the encoded real-time information over a network, the contents of a selected output buffer of the plurality of dynamically created output buffers to be transmitted onto a data communications channel of the network based upon the one or more characteristics of the data communications channel.

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25. The apparatus of claim ⁹~~24~~ further comprising a network interface coupled to the plurality of output buffers, the network interface for interfacing with the network, the network interface determining the selected output buffer and transmitting data over the network from the selected output buffer.

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26. The apparatus of claim ⁵~~25~~, wherein the selected output buffer contains compressed data which, when used in conjunction with the current transmit reference, accommodates the one or more characteristics of the data communications channel better than compressed data from at least another buffer of the plurality of output buffers.

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27. The apparatus of claim ⁵~~25~~, wherein the selected output buffer contains compressed data which, when used in conjunction with the current transmit reference, accommodates the one or more characteristics of the data communications channel better than compressed data from all other buffers of the plurality of output buffers.

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~~28.~~ The apparatus of claim ~~24~~⁴, wherein the compressed data comprises a differential between the encoded real-time information and the current transmit reference.

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~~29.~~ The apparatus of claim ~~24~~⁴, wherein the one or more characteristics of the data communications channel include bandwidth availability on the data communications channel.

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~~30.~~ The apparatus of claim ~~24~~⁴, wherein the one or more characteristics of the data communications channel include burstiness of traffic on the data communications channel.

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~~31.~~ The apparatus of claim ~~24~~⁴, wherein the one or more characteristics of the data communications channel include transmission delay on the data communications channel.

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~~32.~~ The apparatus of claim ~~24~~⁴, wherein the encoded real-time information includes video information.

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~~33.~~ The apparatus of claim ~~24~~⁴, wherein the encoded real-time information includes audio information.

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~~35.~~ An apparatus comprising:

an encoder for producing encoded real-time information;

a transmit reference buffer for storing a current transmit reference;

compression circuitry coupled to the encoder and to the transmit reference

buffer for producing compressed data based upon the current transmit reference and the encoded real-time information;

a plurality of dynamically created output buffers coupled to the compression circuitry for storing the compressed data, each dynamically created output buffer being created and configured based upon one or more characteristics of a communication channel to be used for transmitting the encoded real-time information over a network; and

72 a network interface coupled to the plurality of output buffers, the network interface for selecting a selected output buffer of the plurality of output buffers by determining, with reference to one or more predetermined coding strategies, whether compressed data from the selected output buffer is appropriate for transmission to a receiving node.

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~~36~~ The apparatus of claim ¹⁴~~35~~, wherein the one or more predetermined coding strategies include minimizing artifacts.

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~~37~~ The apparatus of claim ¹⁴~~35~~, wherein the one or more predetermined coding strategies include allocating available bandwidth to achieve a higher frame rate.

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~~38~~ The apparatus of claim ¹⁴~~35~~, wherein each of the output buffers is dynamically created and configured in accordance with characteristics of a communication channel being used to transmit the encoded real-time

information over the network.

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An apparatus comprising:

an encoder for producing encoded real-time information;

compression circuitry coupled to the encoder for producing compressed data based upon a previously stored transmit reference and the encoded real-time information;

f2 a plurality of dynamically created output buffers coupled to the compression circuitry for storing the compressed data, each dynamically created output buffer being created and configured based upon one or more characteristics of a communication channel to be used for transmitting the encoded real-time information over a network; and

a network interface coupled to the plurality of dynamically created output buffers, the network interface transmitting compressed data from a selected output buffer of the plurality of dynamically created output buffers, the compressed data from the selected output buffer when used in conjunction with the previously stored transmit reference approximating a next frame expected by a receiving apparatus.

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f3 The apparatus of claim 39, wherein the selected output buffer is selected based upon current conditions of a communication channel to be used for transmitting the contents of the selected output buffer.

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A method of transmitting data over a network comprising:

encoding the data by determining the differences between the data and a transmit reference to produce differential data;

storing the differential data in a plurality of output buffers dynamically created based upon characteristics of a communication channel to be used for transmitting the differential data over the network;

selecting one of the plurality of output buffers as a current transmit buffer based upon current conditions of a communications channel in the network used to transmit the differential data; and

transmitting the differential data from the current transmit buffer over the network.

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The method of claim ²⁰~~42~~, additionally comprising compressing the differential data prior to storing the differential data in one of the plurality of output buffers.

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A method of transmitting real-time data over a network comprising:

encoding the real-time data by determining the differences between the real-time data and a transmit reference to produce differential data;

storing the differential data in one of a plurality of output buffers, each output buffer dynamically created based upon one or more characteristics of a data communications channel of the network;

selecting one of the plurality of output buffers as a current transmit buffer
by determining whether the differential data in a particular output
buffer accommodates one or more characteristics of the network
better than differential data in at least one other output buffer of the
plurality of output buffers; and

transmitting differential data from the current transmit buffer over the
network.

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45. The method of claim ²³44, additionally comprising compressing the
differential data prior to storing the differential data in one of the plurality of
output buffers.

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46. An apparatus comprising:

an encoder for producing encoded real-time information;

compression circuitry coupled to the encoder for producing compressed
data based upon a previously stored transmit reference and the
encoded real-time information;

a plurality of dynamically created output buffers coupled to the
compression circuitry for storing the compressed data, each buffer
being configured in accordance with characteristics of a
communication channel to be used for transmitting the encoded
real-time information over a network; and

a network interface coupled to the plurality of output buffers, the network

interface transmitting compressed data from a selected output buffer of the plurality of output buffers, the compressed data from the selected output buffer when used in conjunction with the previously stored transmit reference approximating a next frame expected by a receiving apparatus.

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~~47~~ The method of claim ²⁶~~46~~, wherein said encoder produces encoded real-time information by determining the differences between the real time information and a transmit reference.

f3 ²²
~~48~~ The method of claim ²⁰~~42~~, additionally comprising repeating said encoding, storing, selecting, and transmitting using the data from the current transmit buffer as the transmit reference.

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~~49~~ The method of claim ²³~~44~~, additionally comprising repeating said encoding, storing, selecting, and transmitting using the data from the current transmit buffer as the transmit reference.
